REMARKS/ARGUMENTS

Claims 1-12 are active. The claims are generally amended to clarify the language and the relationship of the components recited therein. Claim 1 is also amended to define that the organic electroluminescence device has a single electron injecting layer adhered to the cathode such that the light emitting layer directly contacts the electron injecting layer and the electron injecting layer directly contacts the cathode. Support is found on page 65 and the Examples presented in the specification. New Claim 11 defines the dopant as Li or Cs also find support in the Examples. Claim 12 defines the combination of the compound with a metal chelate complex as in Claim 2 in combination with a dopant selected from Li and Cs as described in the Examples.

Claims 2 and 5-7 were withdrawn due to the election of species requirement. However, Applicants maintain these claims so that the Office, following the appropriate procedure outlined in the MPEP, can expand search and consideration to non-elected species.

No new matter is added.

The rejection under 35 USC 112, second paragraph applied to Claim 8 is no longer applicable as the reductive dopant is the one recited in Claim 1 and is not a second dopant also the positioning of that dopant in a particular region of the electron injecting layer is clear. Withdrawal of the rejection is requested.

By way of Background and as discussed on page 7 of the specification, the claimed arrangement of an electroluminescence (EL) device addresses some rather significant problems that were the result of earlier EL devices such that the claimed arrangement yields a device that uses phosphorescent light emission which exhibits a great efficiency of light emission and has a long life. Further, the inventors found that close adherence between the cathode and the electron injecting layer was improved, the electron transporting ability of the

electron injecting layer could be improved, and the degradation caused by injection of holes could be suppressed when the cathode and the electron injecting layer were closely adhered to each other, and the electron injecting layer comprises at least one compound selected from metal chelate complexes with a ring having nitrogen atom, five-membered cyclic derivatives having nitrogen atom, non-condensed six-membered cyclic derivatives having nitrogen atom and condensed six-membered cyclic derivatives having nitrogen atom and one condensed carbon ring as the main component and a specific reductive dopant.

In fact, the Examples presented in the specification beginning at page 72 highlight the importance of the combination of dopant and compound in a single electron injecting layer. The comparative components of each of the Examples is shown in Table 1-1, reproduced below:

Table 1 - 1

	Electron injecting layer		Hole transporting layer	Light emitting layer,
	main component	reducing dopant		Ir metal complex
Example 1	(A-5)	Li	α-NPD	(K-3)
Example 2	(B-45)	Li	α-NPD	(K-3)
Example 3	(B-49)	Cs	α-NPD	(K-3)
Example 4	(A-5)	Li	α-NPD	(K-10)
Example 5	(A-6)	Li	TCTA	(K-10)
Example 6	(B-7)	Li	TCTA	(K-10)
Example 7	(C-15)	Li	TCTA	(K-10)
Example 8	(A-5)	Li	TCTA	(K-10)
Example 9	(B-7)	Li	TCTA	(K-10)
Example 10	(C-15)	Li	TCTA	(K-10)
Comparative Example 1	(A-5)	-	α-NPD	(K-3)
Comparative Example 2	(A-5)	-	TCTA	(K-10)
Comparative Example 3	(B-45)	-	α-NPD	(K-3)
Comparative Example 4	(B-7)	-	TCTA	(K-10)
Comparative Example 5	(C-15)	-	TCTA	(K-10)
Comparative Example 6	BCP	Li	α-NPD	(K-3)
Comparative Example 7	BCP	Li	TCTA	(K-10)
Comparative Example 8	BCP	Cs	α-NPD	(K-3)

The luminance of emitted light, the efficiency of light emission and the half life were measured for each of these examples and the results are presented in Table 1-2, reproduced below:

Table 1 - 2

	Voltage (V)	Luminance (cd/m^2)	Current efficiency (cd/A)	Color of emitted light	Half lifetime (hours)
Example 1	7.8	102	7.67	bluish green	350
Example 2	7.5	130	10.2	bluish green	720
Example 3	6.5	101	10.8	bluish green	680
Example 4	8.8	111	7.26	bluish green	420
Example 5	10.2	103	10.3	bluish green	460
Example 6	9.2	102	11.4	bluish green	380
Example 7	8.3	98	11.7	bluish green	370
Example 8	10.8	104	12.4	bluish green	460
Example 9	10.0	110	12.8	bluish green	520
Example 10	8.2	102	14.6	bluish green	440
Comparative Example 1	8.3	100	6.42	bluish green	120
Comparative Example 2	12.4	103	7.02	bluish green	100
Comparative Example 3	8.1	100	7.10	bluish green	160
Comparative Example 4	12.0	102	7.38	bluish green	180
Comparative Example 5	10.1	98	8.38	bluish green	170
Comparative Example 6	7.8	76	4.24	bluish green	230
Comparative Example 7	11.4	101	6.22	bluish green	220
Comparative Example 8	8.2	88	4.82	bluish green	160

As discussed in the specification, in Comparative Examples 1 to 5 in which no reductive dopants were added, the efficiency of light emission was markedly inferior and the life was shorter in comparison with those in Examples 1 to 10. In Comparative Examples 6 and 8, the luminance of emitted light and the efficiency of light emission were markedly inferior and the life was shorter although the voltage was low. In Comparative Example 7, the voltage was high, the efficiency of light emission was inferior, and the life was short.

The Action contends that Claims 1, 3, 4 and 8-10 are obvious within the meaning of 35 USC 103(a) when viewed based on what is described in Igarashi, Sakai and Liu. The

basic premise of the rejection is that Igarashi teaches the basic elements of the claimed EL device but does not suggest Li as a dopant in the electron injecting layer. It is for this that Sakai and Liu are cited (see pages 4-5 of the Action).

Applicants respectfully disagree that this combined art teaches what is claimed.

In the amended Claim 1, the layer between the light emitting layer and the cathode is a single layer <u>such that the light emitting layer directly contacts the electron injecting layer and the electron injecting layer directly contacts the cathode</u>. When the metal chelate complex in the electron injecting layer is used in a single layer without the reductive dopant, the gap of electron affinity between the electron injecting layer and the cathode is large. When the gap of electron affinity is large, the EL device must be driven under a high electric voltage resulting in a low efficiency of light emission and short life span. Therefore, in typical EL devices such as that described by Igarishi, the layer between the between the light emitting layer and the cathode is two layers: an electron transporting layer and an electron injecting layer. These two layers are typically used because they are needed to exhibit good light emission and prolong the life of the device. In contrast, the claimed EL device recites that the light emitting layer directly contacts the electron injecting layer and the electron injecting layer directly contacts the cathode or in other words, there is only a single layer between the light emitting layer and the cathode. As this is not taught by any of the cited documents and, indeed, one would not have modified the cited art to the arrangement defined in the claims (because it would be contrary to the knowledge of typically using two layers), the claims would not have been obvious.

Igarishi does not explicit teach the components of the EL device in the Examples. However, as discussed above, to achieve the high light emission efficiencies and prolonged life, Applicants believe that the layer between the light emitting layer and the cathode is actually two layers: an electron transporting layer and an electron injecting layer.. Indeed, this

is what Igarish describes that the "cathode supplies electrons to **an electron injection layer, an electron transport layer** and a light emitting layer.: (page 16, [0097], emphasis added). Whether Sakai and Liu teach Li as a reductive dopant as relied upon in the rejection does not change the fundamental deficiency of the Igarashi disclosure. Therefore, the invention defined in claim 1 would not have been obvious in view of the combination of cited art.

With respect to Claims 2 and 12, it is noted that Sakai's arrangement includes a fluorescent but not a phosphorescent light emitting compound in the light emiting layer (see Example 1 of Sakai). Sakai describes tris(8-hydroxyquinoline)aluminum (Alq). This Alq cannot while the metal chelate complex defined in Claims 2 and 12 can (with the reductive dopant) shut energy in the minimum excited triplet state into a light emitting layer. This is discussed and shown by the Examples presented in the specification and that are reproduced, in part above. Neither Igarish (as conceded in the rejection) nor Liu teach the result that is obtained when combining the metal chelate complex in combination with reductive dopant in the arrangement where the organic electroluminescence device has a single electron injecting layer adhered to the cathode such that the light emitting layer directly contacts the electron injecting layer and the electron injecting layer directly contacts the cathode.

Reconsideration and withdrawal of the rejection is requested.

A Notice of Allowance for all pending claims is also requested.

Respectfully submitted,

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